

ABSTRACT

Provided is an electron beam apparatus which can limit the influence of aberration of a secondary optical system without the need for providing a diaphragm in the optical system, which comprises a multi-emitter type thermal cathode that reduces shot noise, and which has a multi-emitter and a Wehnelt electrode placed in parallel with each other to permit easy and accurate alignment therebetween. In one embodiment, electron beams emitted from an electron beam source are irradiated to a first aperture plate having a plurality of apertures to generate a plurality of primary electron beams which are directed onto a sample. Secondary electrons emitted from the sample are separated from a primary optical system, directed to a secondary optical system as groups of secondary electrons, and focused on a detector, so that the detector outputs detection signals of the secondary electron beams. A second aperture plate having a plurality of apertures is provided in front of the incident plane of the detector. The plurality of apertures of the second aperture plate are formed to prevent different groups of secondary electrons from introducing thereinto.